

The way the Bay Area handles growth and transportation infrastructure needs will exert a powerful influence on how our region looks and functions in the years ahead. The success of the Bay Area economy accelerated the pace of job growth in the last decade, but housing and transportation supply were not able to keep up. Given the latest set of population and employment projections for the next 25 years, it is clear that transportation challenges will be even greater in the future as we look for more effective ways to serve the travel needs of the region's residents and employers, and the growing number of workers who commute to Bay Area jobs from outside the region.

To probe the dimensions of this challenge, MTC utilized economic and demographic projections to forecast how much our population will grow, how many new jobs will be created and where new housing will be produced. We also rely on the most advanced computer-based travel forecasting technology to determine how much travel will occur, where people will go and what mode they will use. These tools help us understand how the investments proposed in the Draft Transportation 2030 Plan will lead to better mobility for the next generation.



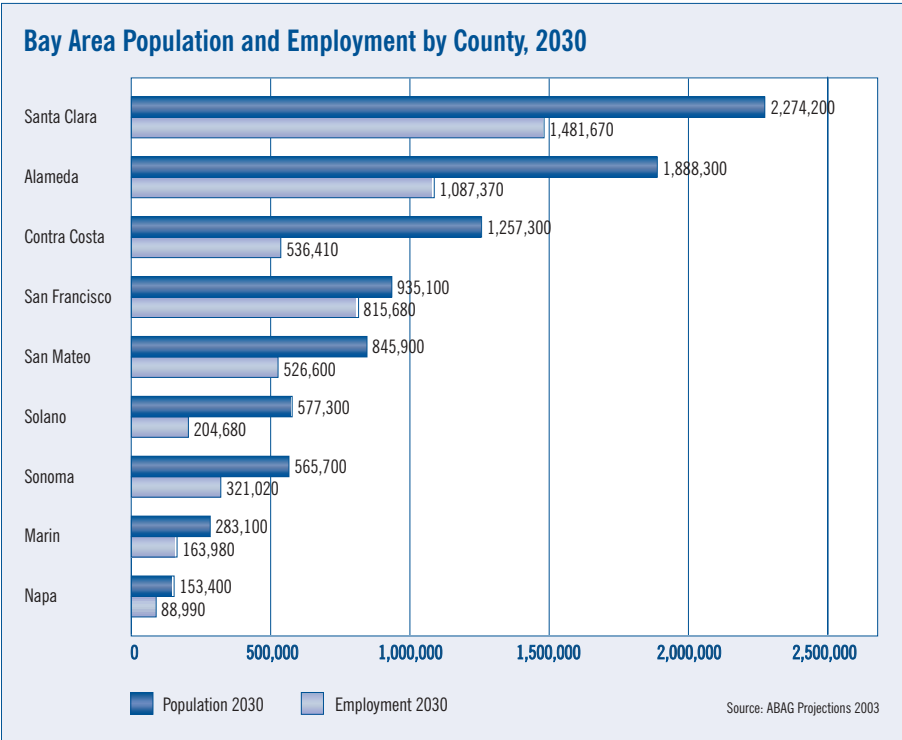
Population, Employment and Travel Trends

Population and Employment

Today, the Bay Area is home to nearly 7 million people and supplies more than 3 million jobs — making our region California's second-largest population and economic center. From 1990 to 2000, the region's population grew from just over 6 million to 6.8 million people, an average increase of 1.3 percent a year. Annual job growth averaged a robust 2.2 percent during this same period. By 2030, job growth will continue to outpace population growth but to a lesser degree than in the previous decade. The Bay Area popu-

lation will grow to 8.8 million by 2030, a 29 percent increase from 2000 or an average of 0.7 percent growth a year. Growth in employment will slow to 1.3 percent a year, reaching a total of 5.2 million jobs in 2030.

Sixty-two percent of the region's population will be found in Santa Clara, Alameda and Contra Costa counties, which will collectively house over 5 million residents. Jobs will remain concentrated in Santa Clara, Alameda and San Francisco counties, with 3.3 million jobs in these three counties. (See graph on "Population and Employment by County," page 24.)



Several changes in the Bay Area’s demographics will have strong transportation implications. While about 10 percent of Bay Area residents are age 65 or older today, this age group will comprise nearly 25 percent of the population in 2030. Furthermore, the number of people over age 85 will double by 2030. Meeting the mobility needs of the Bay Area’s aging population will mean changes in a number of areas, from the design of cars to funding for paratransit systems.

As an indicator of the powerful socio-economic changes within California, the percentage of non-Hispanic whites will decline to 34 percent of the total Bay Area population in 2030 from 50 percent in 2000. Latinos will increase to 31 percent and Asians to 24 percent. The African American population will decrease slightly

to 6.5 percent. However, changing demographics could also increase disparities between income groups, possibly leaving some residents with fewer travel options.

Economically, increases in income levels will affect transportation choices as well. Average household income in the Bay Area will rise in real terms from \$92,000 in 2000 to \$118,000 in 2030. The level of auto ownership is likely to rise along with income, as more families will be able to purchase additional vehicles.

The Direction of Future Growth

Transportation 2030 looks at the future through the lens of the Projections 2003 forecast (see “Land Use and Growth,” page 32) prepared by the Association of Bay Area Governments (ABAG). This forecast assumes that a significant share of new development will occur in infill opportu-

Top 10 Population Growth Cities

City	2000–2030 Change
San Jose	385,457
San Francisco	158,367
Oakland	122,116
Fremont	53,687
San Ramon*	46,278
Fairfield	46,122
Dublin	44,527
Santa Rosa	43,405
Pittsburg	42,431
Vacaville	41,975

*Includes Dougherty Valley Source: ABAG Projections 2003

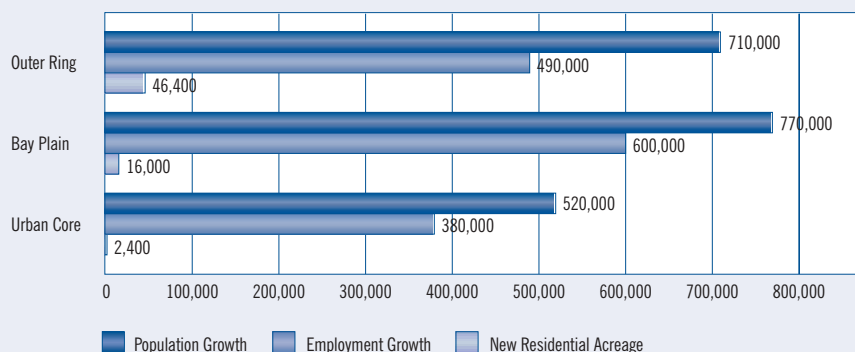
Top 10 Job Growth Cities

City	2000–2030 Change
San Jose	188,760
San Francisco	181,250
Oakland	69,790
Santa Rosa	55,420
Fremont	55,280
Livermore	44,650
Unincorporated	40,300
Santa Clara	35,560
Sunnyvale	32,370
Concord	26,170

Source: ABAG Projections 2003

nity zones in the urban core and, to a lesser extent, in existing suburbs. Indeed, the three largest urban centers — San Jose, San Francisco, and Oakland — are projected to lead the region in population and job growth (see tables above). Growth will continue to occur in other cities and suburbs throughout the region with an emphasis on development around regional transit hubs, urban neighborhoods and older suburbs.

Population Growth, Employment Growth and New Residential Acreage, 2000–2030



Source: MTC analysis of ABAG Projections 2003

“ THE FORECAST ASSUMES THAT A SIGNIFICANT SHARE OF NEW DEVELOPMENT WILL OCCUR IN INFILL OPPORTUNITY ZONES IN THE URBAN CORE. ”

To better understand future growth trends, it is useful to summarize growth in population, employment and residential acres by three land-use patterns within the region: at the center are the urban cores, consisting of San Jose, San Francisco and Oakland (with adjacent Emeryville and Berkeley). Around these cities is the Bay Plain, consisting of the inner suburban communities between the Bay and the surrounding hills. The outer ring is comprised of the more distant suburbs and agricultural land that make up the rest of the nine-county area. The graph above shows that the urban core will accommodate about 25 percent of the population increase. The remaining population growth will be split about evenly between the outer ring and the Bay Plain. This

represents a marked change from current growth patterns under which, if projected into the future, approximately 10 percent of population growth would occur in the urban core and more than 50 percent in the outer ring.

The growth pattern assumed under Projections 2003 is characterized by increases in average development density, particularly in the urban core, reflecting an interest in preserving agricultural lands and open space. With a strong emphasis on infill and transit-supportive development, residential densities in the urban core will increase significantly from 36.1 to nearly 44.9 persons per residential acre. At the other end of the spectrum, residential densities in the outer ring will increase just marginally from 6.1 to 7.3 persons per residential acre (see table above).

The Nature of Travel in 2030

Travel decisions are influenced by many factors, including the need to attend school, get to work, visit the doctor, shop or buy groceries, catch a flight at an airport, or even just the desire to play in the neighborhood park. Estimating the

Residential Density

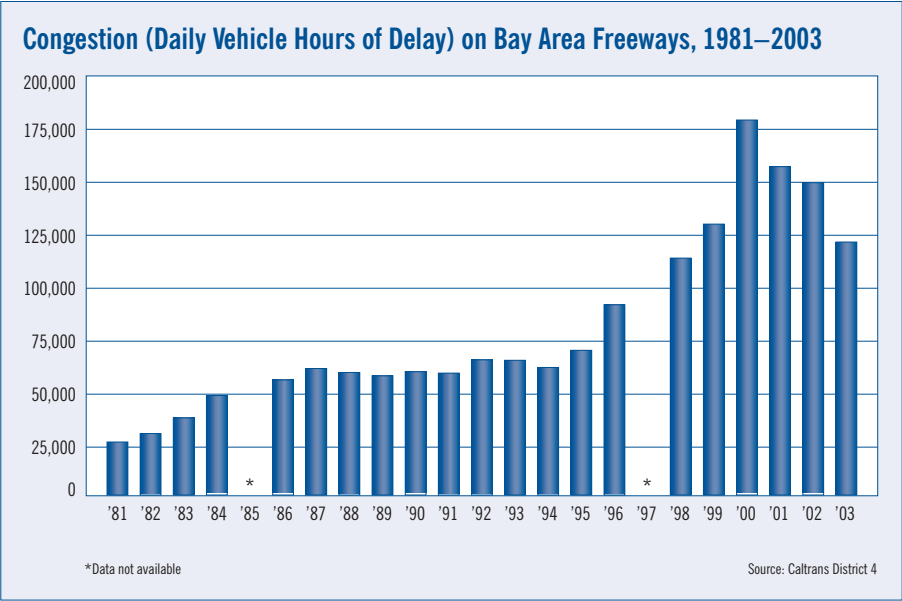
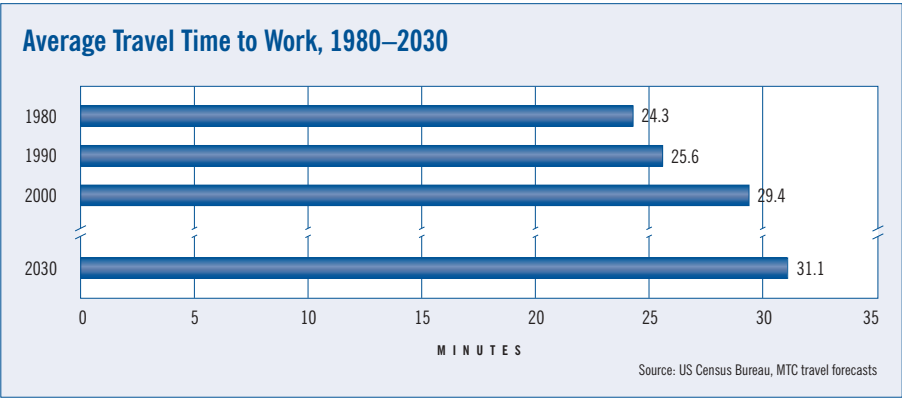
Persons per residential acre, 2000–2030

Ring	2000	2030
Urban Core	36.1	44.9
Bay Plain	13.8	16
Outer Ring	6.1	7.3
Region	11.6	13.5

Source: MTC analysis of ABAG Projections 2003

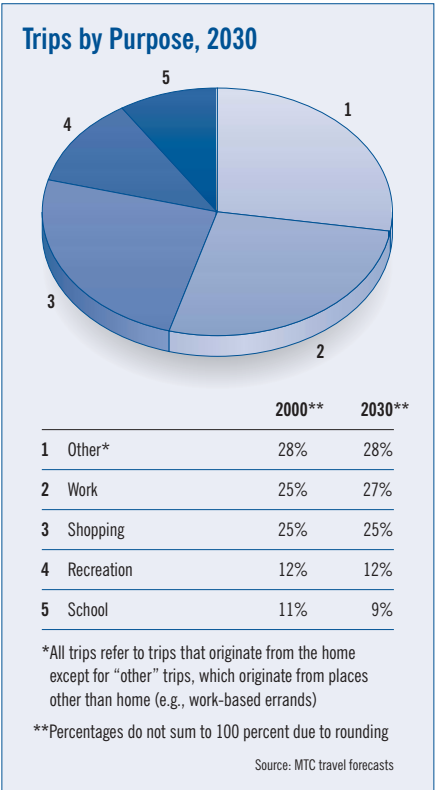
amount of travel that will occur in the future is a complex task that involves determining the types of trips made, the geographic origins and destinations of trips, and the travel time and cost factors that influence decisions about whether people will use a car, take transit or walk to make their trips. Every 10 years, MTC updates information on personal travel behavior by collecting key information from a sample of Bay Area households (including retired people and people who work at home). This information is then fed into computer models that project how much travel will occur, where people will travel and how they will travel.

Available data from the 2000 US Census provides information on the travel patterns within the Bay Area. In 2000, residents made an estimated 21 million trips on an average weekday, which is 3 million more trips than in 1990. Not only are Bay Area residents traveling more, many trips are taking longer. An average Bay Area commute took 24.3 minutes in 1980, 25.6 minutes in 1990 and 29.4 minutes in 2000. With the increases in population



and employment expected to occur in the region, it is no surprise that the average travel time to get to work will increase to 31.1 minutes in 2030 (see graph at top of page). While development patterns and lifestyle choices certainly have contributed to growth in commute time, increasing traffic congestion is a major factor. A gradual growth in traffic congestion occurred through the 1980s and mid-1990s with a dramatic increase leading up to 2000. Congestion has declined in the past several years with the relatively cool Bay Area economy, and by 2003 had fallen back to 1999 levels (see lower graph above).

The total number of daily trips made by Bay Area residents is projected to grow by 35 percent to a total of 28.5 million by 2030. Similar to today, just over a quarter will be work-related. Work trips typically define the peak demand for the transportation system because of their length and timing. Other major trip purposes include travel to shopping, recreation and school (see pie chart above).

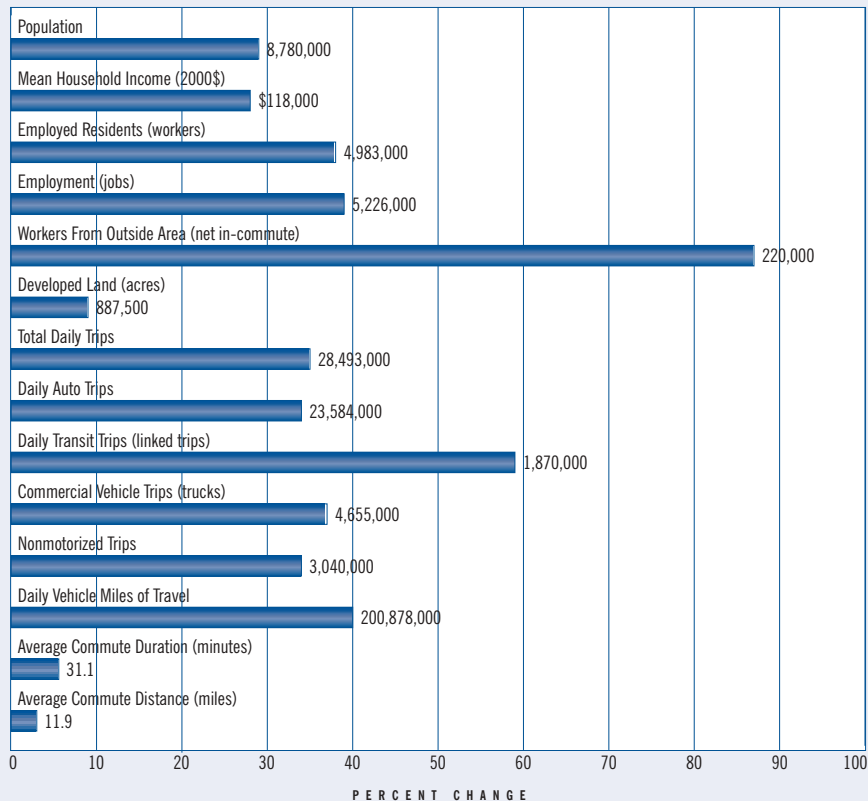


“ TRAVEL ACTIVITY AS REFLECTED BY DAILY TRIPS INCREASES AT A HIGHER RATE THAN POPULATION GROWTH BUT AT A LOWER RATE THAN EMPLOYMENT GROWTH. ”

Truck trips will grow 37 percent to 4.7 million in 2030. Most truck traffic will occur in the same corridors that serve as major truck routes today: I-880 serving the Port of Oakland and major industrial areas in Alameda and Santa Clara counties; I-580 linking the Bay Area to the Central Valley; and Highway 101 serving San Francisco International Airport (a regional hub for air cargo) and the population and industrial centers of San Francisco, San Mateo and Santa Clara counties.

Regional Demographic and Transportation Indicators

Bay Area Total in 2030 and Percent Change From 2000



Source: MTC travel forecasts and ABAG Projections 2003

One way to put travel projections into perspective is to compare them with other key indicators, as in the bar graph above. Travel activity as reflected by daily trips increases at a higher rate than population growth but at a lower rate than employment growth. The number of trips by walking and bicycling (nonmotorized trips) and by automobile will increase at rates comparable to the overall growth in trips (34 percent each). Transit ridership, however, is projected to increase almost twice as fast (59 percent), reflecting assumptions that much new population and employment growth will be focused in the urban core areas and along transit corridors.

The noteworthy growth in transit ridership represents a slight but significant change in travel patterns, particularly for travel to work. While automobiles will continue to be the most popular mode of travel, the share of all work trips by automobile (drive-alone and carpool) will drop from close to 85 percent in 2000 to 82 percent in 2030. All of the decrease results from a drop in the share of drive-alone trips. There is a corresponding increase in the share of work trips by transit, which will rise to 13 percent in 2030 from just under 11 percent in 2000 (see table at top right). When it comes to all trips (work

Work Trips by Mode, 2000 and 2030

Mode Share	2000	2030	Change
Drive Alone	71.0%	68.1%	-2.9%
Carpool	13.7%	13.9%	0.2%
Transit	10.9%	13.3%	2.4%
Walk	3.3%	3.3%	0.0%
Bicycle	1.1%	1.4%	0.3%

Source: MTC travel forecasts

All Trips by Mode, 2000 and 2030

Mode Share	2000	2030	Change
Auto*	83.7%	82.8%	-0.9%
Walk	9.2%	9.2%	0.0%
Transit	5.6%	6.6%	1.0%
Bicycle	1.5%	1.4%	-0.1%

*Drivers and passengers

Source: MTC travel forecasts

and nonwork trips), automobiles will account for 83 percent of trips and transit trips for just fewer than 7 percent of trips. Walking is a more common mode of travel when it comes to all trips (9 percent), though it makes up just over 3 percent of work trips (see tables above).

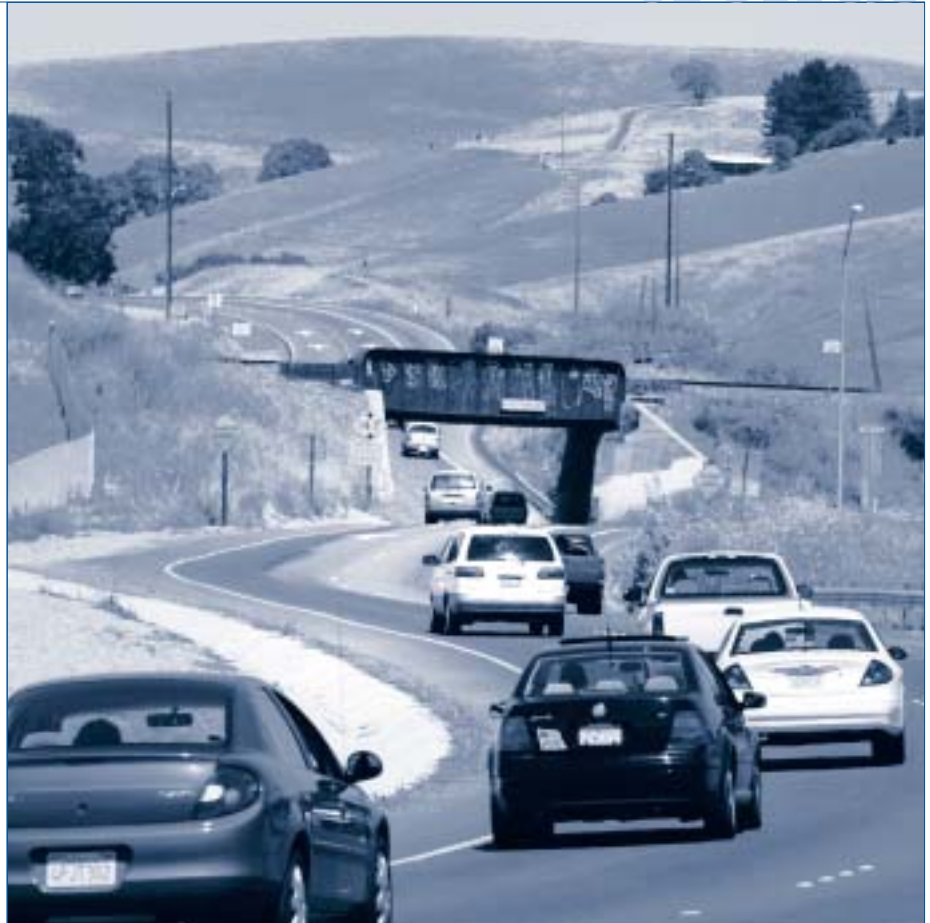
The increase in the share of work trips by transit, though small in percentage terms, represents a significant increase in the number of additional people taking transit each day. The net increase in 2030 is 433,000 transit riders on an average weekday or about 108 million additional transit riders each year. This is slightly more than the number of people who rode BART in all of 2003. Added capacity will be required in order to accommodate the increased demand on those bus and train systems that are already crowded at peak commute hours, such as BART through the transbay tube, Muni trunkline bus and light-rail routes, and downtown rail stations.

Daily Travel Patterns

Bay Area residents crisscross the region daily in an intricate pattern of trips that is largely shaped by where people live and work. As can be seen in the map on the facing page, most people's trips in 2030 will begin and end in the county where they live. Trips within counties account for approximately 85 percent of all trips and 70 percent of all work trips, and this percentage will remain stable over the next 25 years.

One way to assess future travel patterns is to look at the number of trips made in either direction across "screenlines," that is, the number of trips crossing a particular geographic location, typically the boundary between two counties or between two subareas within a county. Many of the major transportation investments in Transportation 2030 are directed at trips across these screenlines, which reflect the major travel markets. The busiest screenlines within the region include the San Francisco-San Mateo county border, the San Francisco-Oakland Bay Bridge, and the San Mateo-Santa Clara county border, which are characterized by some of the region's most robust transit service.

The most significant change in daily trips between Bay Area counties from 2000 to 2030 will occur over the Sunol Grade between Alameda and Santa Clara counties (116 percent increase in daily trips), within the I-680 south corridor between Contra Costa and Alameda counties (88 percent increase in daily trips) and between Napa and Solano counties on routes 12 and 29 (68 percent increase in daily trips).



LANCE IVERSEN/SAN FRANCISCO CHRONICLE

“ MOST PEOPLE'S TRIPS IN 2030 WILL BEGIN AND END IN THE COUNTY WHERE THEY LIVE. ”

Gateways into the Bay Area from neighboring counties represent some of the fastest-growing travel markets, as the number of Bay Area workers who commute from neighboring counties will continue to rise due to the higher cost and relative scarcity of housing with the region. Although Transportation 2030 calls for more housing within the region than would be expected under current trends, the odds are stacked against a complete correction of the current Bay Area housing deficit in the next 25 years. Of course, people will travel to the Bay Area from neighboring counties for other reasons, too, including for shopping, rec-

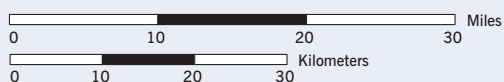
reation, school and other purposes. The busiest regional gateway in 2030 will be the Alameda County/Central Valley border, which will witness 474,000 daily trips for work and other purposes on an average weekday. Only the northern- and southernmost gateways are expected to grow faster, though they will be less busy in terms of absolute number of trips. At the southern tip of the region, the number of daily trips at the gateway between Santa Clara County and the counties of San Benito and Monterey will increase 120 percent. Daily trips at the northernmost gateway between Napa County and Lake County, though small in total number, will grow 102 percent, overloading the largely rural and winding roads in that part of the region.

Bay Area Travel Volumes in 2030

Daily Person Trips in 2030
Percent Change 2000–2030

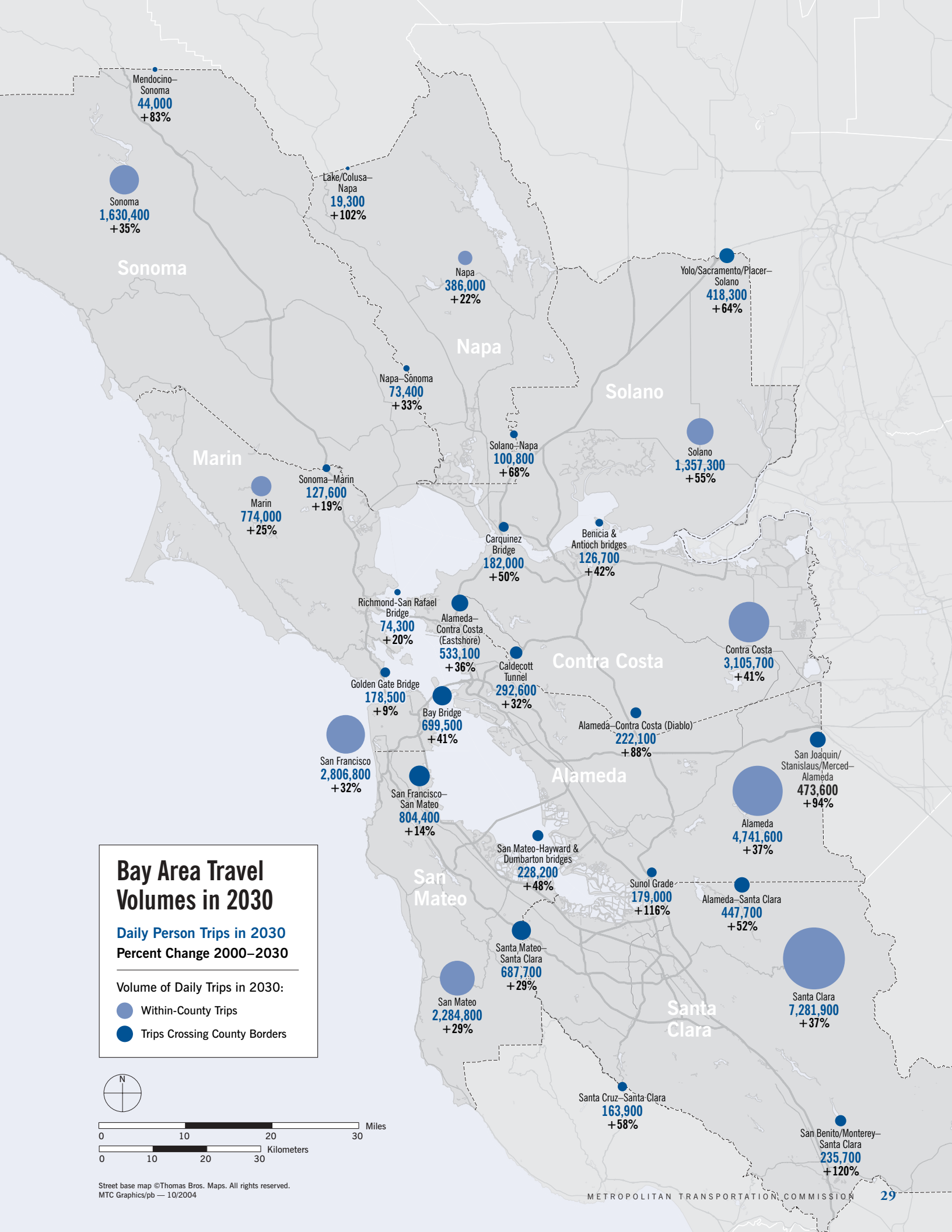
Volume of Daily Trips in 2030:

- Within-County Trips
- Trips Crossing County Borders



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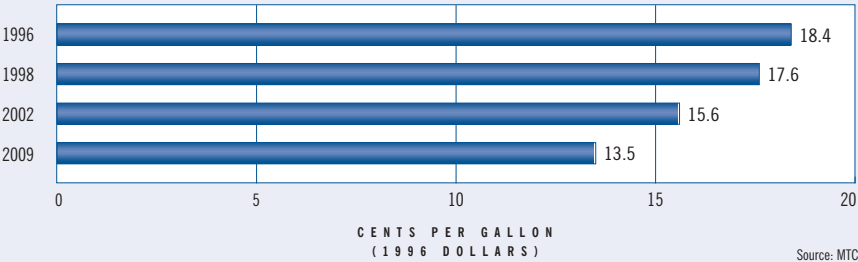
Average Commute Distance in 2030

County of Residence	Distance (miles)	Change from 2000
Alameda	12.3	6%
Contra Costa	16.0	3%
Marin	11.4	-11%
Napa	16.1	39%
San Francisco	6.1	-15%
San Mateo	10.0	-6%
Santa Clara	9.5	-3%
Solano	22.9	26%
Sonoma	13.2	-12%
Bay Area Average	11.9	3%

Source: MTC travel forecasts

Work trips, because they are largely concentrated during a few hours each day, exert the greatest pressure on the regional transportation system. Not surprisingly, workers who live in job-rich counties will have shorter commutes than workers from other parts of the Bay Area. San Francisco residents will have particularly short commutes due to the density of development as well as the number of jobs. Santa Clara County residents will have the next-shortest average commutes due to the large numbers of jobs in employment centers throughout the county. The workers with the longest average commutes will be those living in Solano, Napa and Contra Costa counties (see table above). Napa and Solano counties, which are located farthest from existing and future regional employment centers, are the only counties in which the average commute distance in 2030 reflects a significant increase compared to today. In fact, the average commute distance is projected to decrease

Erosion of the Purchasing Power of the Federal Excise Tax on Gasoline Due to Inflation (1996–2009)



Source: MTC

by 2030 for residents of five counties. This likely reflects efforts to locate new housing in developed urban and suburban communities, close to county employment centers. Of course, these average commute statistics do not show variation within counties, where residents in the more developed urban and suburban areas typically have shorter commutes than those living elsewhere in the county.

Transportation Funding Outlook

While the region’s demand for transportation capacity and service will continue to grow, existing sources of transportation funding have not kept up with the recent growth in travel and are expected to lag even further in the future.

There is an immediate funding crisis at the state level, where funding for transportation has slowed to a trickle over the past few years as the governor and state legislators have borrowed liberally from transportation funds (revenues from gasoline taxes and sales tax on gasoline) to close state spending gaps unrelated to transportation. Between 2001 and 2005 more than \$3 billion in gasoline sales tax revenue will have been siphoned from transportation accounts to

“GAS TAX REVENUE, THE PRINCIPAL SOURCE OF TRANSPORTATION FUNDING, IS LOSING VALUE OVER TIME AND THERE IS A LACK OF POLITICAL WILL TO REVERSE THIS TREND.”

balance the state budget. In the early 1990s, when the state experienced a somewhat milder drop in funding for transportation improvements, transportation investments were kept afloat by increases in federal funding for transportation; however, this is unlikely to happen in the near future as the proposed six-year federal reauthorization funding level is expected barely to keep pace with inflation.

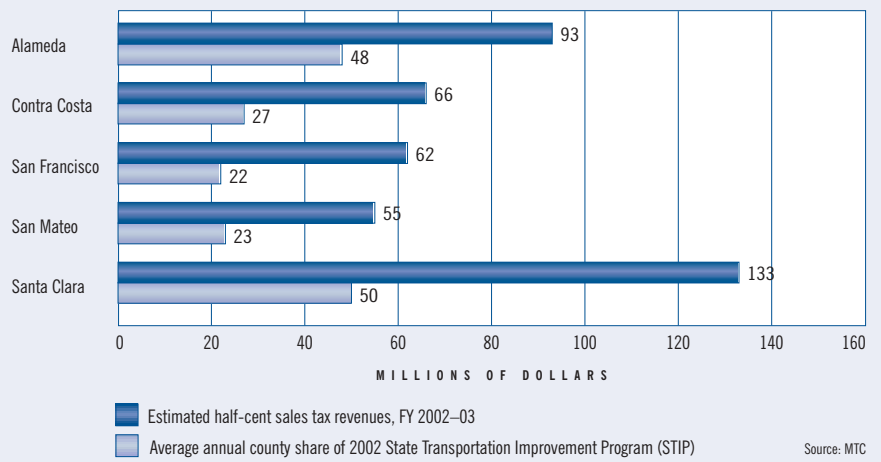
Underlying the near-term crisis is a larger structural problem: gas tax revenue, the principal source of transportation funding, is losing value over time and there is a lack of political will to reverse this trend. Neither the state nor the federal gas tax has been raised in over a decade. Since the state gas tax was last raised in 1990 (from 9 to 18 cents) it has lost 25 percent of its purchasing power to inflation. The federal gas tax was last raised by 2.5 cents to 18.4

cents in 1993 and has similarly lost value to inflation (see bar graph on facing page). To make matters worse from a finance perspective, as automobile fuel efficiency continues to improve (a good thing from an air quality perspective), the link between gas tax revenues and traffic congestion and roadway wear and tear will erode even further. Despite these discouraging trends, neither Congress nor the state Legislature have taken action to generate more revenue through fuel taxes.

As state and federal funding have failed to keep pace with growing demands for transportation investments, local funding sources have become increasingly important. In each of the Bay Area counties with a local transportation sales tax in place, the proceeds from this levy exceed the transportation funding the county receives from the state (see bar graph at top right). The four Bay Area counties that have been unable to pass a local sales tax find themselves in an especially deep transportation deficit. A good example is Sonoma County, where the only freeway and main north-south artery (U.S. 101) remains a four-lane road — just as it was built in the 1960s — despite a 184 percent increase in population and 395 percent increase in jobs.

While local sales taxes have become a key piece of the funding puzzle, they are not likely to be a silver bullet for the funding challenges ahead. Under current law, a local sales tax can be passed or renewed only with a two-thirds majority vote. Some Bay

County Transportation Sales Tax Revenues Compared to State Transportation Funding



Bay Area County Half-Cent Transportation Sales Tax Receipts

	FY 2000-01 (millions)	FY 2001-02 (millions)	FY 2002-03 (millions)	Change FY 2000-01 to FY 2002-03
Alameda	113.2	101.0	92.7	-18.1%
Contra Costa	64.7	65.6	65.8	1.7%
San Francisco	77.5	63.9	61.9	-20.2%
San Mateo	68.7	58.6	54.9	-20.1%
Santa Clara	190.0	149.9	132.7	-30.2%

Source: MTC

Area counties have failed multiple times to marshal the necessary votes to pass a local sales tax for transportation. In addition, the same economic forces that precipitated the current state funding crises have affected local transportation sales tax revenues as well. Between 2001 and 2002 local transportation sales tax receipts declined between 10 percent and 21 percent in four of the five counties with measures in place (see table above). Lastly, the increasing reliance on general sales tax further attenuates the link between the amount of travel and revenue generation, which introduces an inherent inefficiency.

Summary

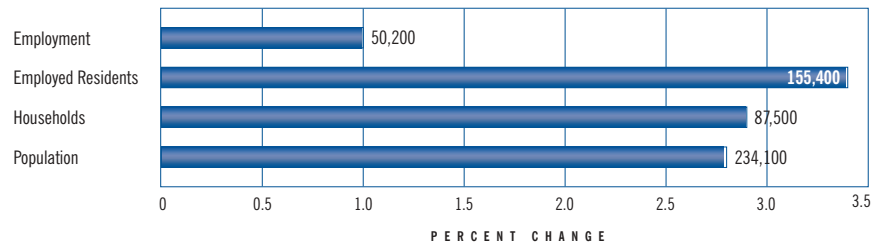
This “big picture” look at regional growth, travel trends and the transportation funding outlook provides the planning context for the Draft Transportation 2030 Plan. It is clear that the transportation environment is relatively organic, requiring us to adapt quickly to predictable and unexpected changes. Keeping this in mind, the following chapter explores the financial foundations for the plan.

Bay Area Land Use and Growth Patterns: From Vision to Policy

As with past long-range transportation plans, the Transportation 2030 Plan uses the economic-demographic forecasts produced by the Association of Bay Area Governments (ABAG) — the latest forecasts being Projections 2003. In a departure from previous forecasts, Projections 2003 is founded on a vision of how the Bay Area might wish to direct residential and job growth in the future based on alternative land-use policies developed through ABAG's Smart Growth Project. The outcome of this planning effort was the Smart Growth Vision for the region — a new growth pattern that builds supportive development around transit stations and directs growth into revitalized central cities and older suburbs.

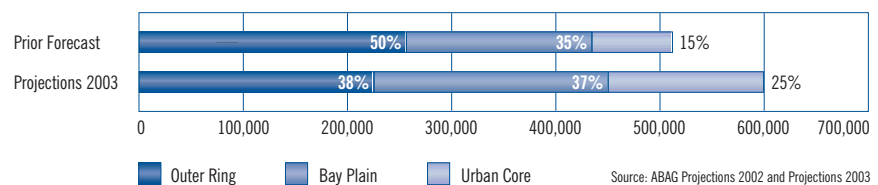
ABAG translated the Smart Growth Vision into specific economic and demographic forecasts for Projections 2003, reflecting market forces as well as the principles and strategies of the Smart Growth Vision. The forecasts show what the region could look like if local jurisdictions, the state and other agencies begin to implement the necessary policies to direct growth consistent with the Smart Growth Vision. While Projections 2003 does not achieve all of the Smart Growth Vision's numeric goals for directing new growth to already-developed areas, it does illustrate how the region as a whole can move in this direction. While state and regional policy changes will help to meet the Projections 2003 trends, changes to existing local general plans will be the deciding factor.

**Transportation 2030 Demographic Forecasts (Projections 2003)
Compared to the Prior Forecast, Year 2025**



Source: ABAG Projections 2002 and Projections 2003

Location of New Households in Projections 2003 and Prior Forecast, Year 2025



Source: ABAG Projections 2002 and Projections 2003

Increasing the amount of housing within the Bay Area to accommodate the region's growing workforce and slow the movement of Bay Area workers to neighboring counties for more affordable housing is among the key principles of the Smart Growth Vision. In carrying out this principle, ABAG forecasts 88,000 more households and 234,000 more residents in the Bay Area in 2025 in Projections 2003 as compared to its prior Projections 2002 forecast. Projections 2003 similarly shows an increase of 155,000 in the number of employed residents in 2025 compared to Projections 2002 (see top bar graph). As a result, the growth in the number of Bay Area workers who commute from neighboring counties will be slower than one would assume based on prevailing growth patterns. Furthermore, Projections 2003 projects 220,000 Bay Area workers will reside in neighboring counties in 2030, whereas Projections 2002 projected this number would reach 265,000 by 2025.

The Smart Growth Vision also calls for changes in the location of future growth. To slow the loss of agricultural land and open space to new development, a larger share of new housing and commercial development would be directed along major transit corridors and to infill opportunity zones in urban and suburban communities. Consistent with this principle, Projections 2003 shows 25 percent of new households created between 2000 and 2025 would be located in the urban core composed of San Francisco, San Jose and Oakland, a substantial increase over the 15 percent shown in past forecasts. Similarly, the share of new housing located in the outer ring (composed of the more distant suburbs and current agricultural land) decreases to 38 percent in Projections 2003 from 50 percent in the prior forecast (see lower bar graph).